25; Ferrars E-5 (ca. 1890) 1901 APl Burma
Burmese AP4

104. OUTLOOK OVER MIXED FORMS OF CULTIVATION.

the vagaries of the rivers. A good season is one in which a large proportion of the fields have water enough for an early start and in which the rainfall is steady, not leaving the surface to dry up by a long break in the rain nor deluging the soil at other times. All the alluvial land of favourable elevation and quality is laid out in level rice-fields. Where the rainfall is ample—fifty inches and upwards—portions of the diluvial land with tenacious soil can be utilised in the same way by merely saving the surface-water. In regions of lighter rainfall, in a few favoured localities, such land is brought under rice by help of irrigation and if need be by terracing as well. The rice-fields are bordered by low turfy balks (*kazin*) about a cubit high, to keep in the water. These regular rice-lands form less than one-tenth of the gross area of the country. The rest is mainly irreclaimable, chiefly mountain, waste. The waste areas of the alluvial plains (*kwin*) are flooded from three to ten feet deep in the rains. They are clothed with elephant-grass (*kaing*) studded, through with silk-cotton trees and a few other species. The lowest levels in the *kwin* form shallow lagoons (*in*, No. 103) which dry up in the hot season. Dry-season crops—sugar-cane (which is also grown on the wet system), maize, lentils, and vegetables for a limited market—are obtained in the *kaing*.

105. HILL-PEOPLE MAKING THEIR CULTIVATION CLEARING [P. 149].

Burma has become the rice-mart of the world. Since the development of this trade the price of the staple export has more than quadrupled, producing in the lower country a prosperity which has no parallel in respect of its equal diffusion. It is believed that this development of the wealth of Pegu has been favoured by the upheaval

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Burmese AP4

of the delta of the Irawadi, by which fresh silt-beds are raised to the cultivation level. The town of Thâton, now sixteen miles from the coast and without a sea approach, was, in historic times, a port. Ships came up to Tenaserim in the south, the ancient emporium of trade across the Peninsula to Siam, and to Akauttaung in the north, and probably to Pegu. A mass of precise data on this subject was collected by the late Mr. John Merrifield, who came to the conclusion that Tenaserim had risen fifteen to twenty feet in the course of the last 300 years. In 1900, ten and a half million acres were cultivated in Burma. The rice crop was estimated at three and a half million tons, of which two millions were exported, worth £14,000,000. Fallow lands were estimated at five and a half million acres and arable waste at twenty-four millions, out of a gross area of one hundred and one millions. In 1872 a considerable firm failed over the enterprise of bringing a few thousand acres of reputed arable waste at Kayásu under cultivation; the crops got so much water that they rotted. The area has lain waste ever since. Most of the waste land granted to companies has been resumed, on account of their failure to satisfy the condition of utilising the land. The conditions which render land suitable for wet cultivation are less simple than they appear at the first glance. It is possible that the estimate of the arable waste is much too high.

108. THE RICE PLANT IN THE EAR.

Where the fields depend on the surface-water for their supply, a margin of fallow has to be left; where they get a deposit of river-silt it is unnecessary. If manure is plentiful it is taken out on the fields. But this is seldom the case because the cattle are so much at large. On the outskirts of the rice-fields, which are dispersed in groups throughout the *kwin*, fallow land may readily relapse into waste. The depopulation of Pegu (Chronology, 1570, 1591–1740) threw great areas out of cultivation. Anyone was free to reclaim waste, and is so still. In Burma Proper, where good land is much scarcer than in Pegu, proprietors are fixed on the soil in many places by royal grants (*kye-mye, bôbabaing*). There were also royal demesne lands leased to tenants.

In the dry zone of Burma Proper, rice cultivation is impracticable except where rivers flood their margins or where facilities for irrigation exist. Rice

25: Ferrars E-5 (ca. 1890) 1901 API Burma
Burmese API

313
137

249. DEFILE BELOW THE LAST RAPID OF THE SALWEEN.

high in a few seasons and get clear of the forest fires. But those struggling under cover are cut back by fire every year. Trees may attain a height of sixty feet in twenty years. A vigorous tree attains a marketable size of seven to eight feet girth at breast height in sixty to eighty years; trees of ten to twelve feet girth are common on good sites. The boles of the full-grown trees range from twenty-five to seventy-five feet and are mostly straight and round.

313
137
134

The character of the dry mixed forest is determined by the prevailing bamboo, one of seven or eight species. The mixed forest constitutes a vegetal zone skirting the *kwin*, chiefly on sandstone slopes and hills, up to one thousand feet elevation. The timber tree most abundantly interspersed in the bamboo is *pyinkadò*, an "iron-wood" suitable for house-posts, sleepers, and rough work. The most valuable timber tree after teak, but even more sparingly distributed, is *padauk*, an excellent wood for carriage-building; it has a rich red colour. In the driest type of mixed forest the cutch-tree is common (*shd*). The sandstone soil is interrupted by great stretches of "laterite," noted for its barrenness. It is not devoid of vegetation, but the forest which occupies these areas is open and stunted, with frequent blanks. It is called *indaing* from the prevailing *in*, the only gregarious forest tree of Burma, excepting the trees of the littoral and the pine of the high altitudes. This forest contains several congeners of the *sál* of India. Below the forests of the sandstone and laterite comes the *kwin*, with its prevailing *kaing*, interspersed with *leppan* and *pauk* trees. In the water-logged spots, and on the fringes of permanent lagoons, is the

250. MANGROVE JUNGLE.

25: Ferrars E-5 (ca. 1890) 1901 APl Burma
Burmese AP4

313
137
134

222. RIPARIAN FOREST.

paludal forest (*yagaing taw*) and marshland (*bwet*). Towards the sea, the river-sides of the *kwin* are bordered with *lamú* and *pinlè-kanazò*, the evergreen monotony of which is only broken by the *danl* (*Nipa*), a palm with immense fronds somewhat like the cocoanut, but not developing a stem. The mud-banks of the tidal estuaries are overgrown with mangrove (*byú*). Above the brackish water, the riparian tree is the willow (*mômakú*), the tree that "denies its homage to the rain." For when by grace of heaven trees put forth their leaves, the willow sheds its own, and in the drought when all the rest are bare, the saucy tree breaks into leaf. Between the willow at the water's edge and the *kwin* or the hill-slope, as the case may be, comes a narrow band of riparian forest with a frequent undergrowth of cane-brake. This is the habitat of several useful timber trees, *thingán*, *pyinma*, *thikká*, *ka-nyín* (wood-oil). These trees and their associates follow the banks of the small feeders into the hill-regions, or form an inter-mixture in the forest of evergreen trees which occupies the soles of ravines, abounding in lianas and epiphytic plants, with an undergrowth of *musaceæ*. Above this forest or, in other cases, the *kwin*, comes the zone of dry forest already described.

137
313

Above the dry forest zone, but also at lower levels where the soil is volcanic, comes the hill evergreen forest (No. 256). Here trees are in the ascendant, except for occasional patches of giant bamboo (Nos. 122, 362). The trees are of innumerable species, of spongy and worthless timber, with a sprinkling of *ka-nyín*, *kaung-hmú*, *taung-pein-hné*, and *thingán*, and in the extreme South, *gangaw*. The undergrowth consists of young trees, with palms, pandanuses and

223. UPPER WATERS OF RIVER (JULY).